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THE OUTSIDE STORY

Each week we publish a new nature story on topics ranging from skunk cabbage respiration to clams in the woods.

EDITOR'S BLOG

If summer were a weeklong vacation, mid-August would be Friday afternoon. You're not packing your bags to come home yet, but there's an awareness that there's more behind you than in front of you. (From "The Peak.")

WHAT IN THE WOODS IS THAT?

We show you a photo; if you guess what it is, you'll be eligible to win a prize. This recent photo showed black walnuts eaten by red squirrel.

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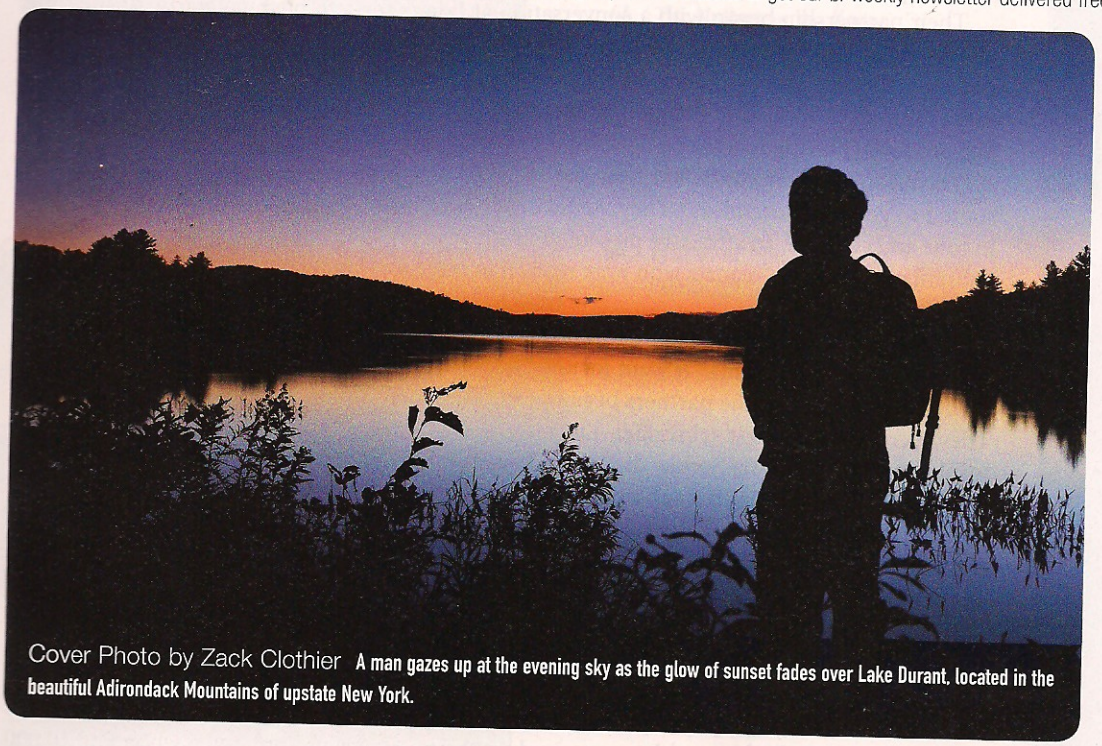

Cover Photo by Zack Clothier **A man gazes up at the evening sky as the glow of sunset fades over Lake Durant, located in the beautiful Adirondack Mountains of upstate New York.**

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features

departments

Exotic Larch

Inset: A 22-year-old hybrid larch in Maine.

Not Your Grandfather's Hackmatack

By David Maass

In the 1980s, in the midst of the last spruce budworm outbreak, the pulp and paper industry in Maine and eastern Canada faced an unprecedented softwood shortfall. The insect was killing millions of cords of spruce and balsam fir, and paper companies were scratching their heads over the big picture. I was conducting research with the Scott Paper Company at the time, and much of our work involved coming up with strategies to overcome the "budworm gap" set to occur in the early 2000s.

One of the more novel ideas was planting exotic larch, which grows much more quickly than native softwoods. David Cook, the owner and manager of Cooxrox Forest, in Rensselaer County, New York, published a series of articles in the 1960s indicating that both European (*Larix decidua*) and Japanese larch (*Larix kaempferi*) grew 1.5 to 2.0 cords per acre per year on old fields, three to four times faster than our native stands. At the U.S. Forest Service Coulee Experimental Forest in Wisconsin, 19-year-old European larch had produced 29 percent more volume than the white pine planted as a control, achieving 2,621 cubic feet per acre. (That's 30 cords, or 76 tons per acre.) And one Canadian study at the time reported that, on average, exotic larches produced 57 tons per acre at age 18, while native confers produced 33 tons per acre.

DAVID MAASS

As impressive as these numbers were, evidence from Europe suggested that crossing a European larch with a Japanese larch could produce an even faster-growing tree. (Hybrid plants, resulting from a cross between parents of different species, can outgrow their parents – geneticists call this "hybrid vigor.") Starting in the 1980s, Scott Paper Company joined the Institute of Paper Chemistry's Aspen and Larch Genetics Cooperative and sought to establish plantations of these hybrid trees.

Scott Paper established a seed orchard in Unity, Maine, by surrounding Japanese larches with European larches. Once the trees reached reproductive age, workers collected the female cones of the Japanese larch and used them to establish hybrid plantations. (These seeds were considered to be open-pollinated, since it was assumed they'd been pollinated by European larches, but only one parent was definitely known.) They also developed controlled crosses, where the pollen from the European larch was manually collected and used to pollinate female Japanese larch cones. These controlled crosses were set out in test plots to compare families. Similar larch breeding programs were developed in the Great Lakes region, Quebec, and the Maritimes.

The early results were encouraging. A study conducted by the University of Maine 15 years after planting found that the open-pollinated hybrid larch had a total merchantable volume of 28 cords/acre, compared to 13.7 cords/acre for Japanese larch and 8.7 cords/acre for native tamarack (*Larix larcina*). Now, 20 to 30 years after planting, we are finding that open-pollinated exotic larches can be grown to 10 inches in diameter or better – given the right site and good control of competition – at less than 25 years of age.

Last fall, I accompanied Dr. Michael Greenwood and Dr. Brian Roth from the University of Maine to a controlled-cross larch plantation that Dr. Greenwood had established in 1992 near Parlin Pond, Maine. Greenwood was optimistic about the results we might observe, and we weren't disappointed. The best control-pollinated hybrid families averaged 10 inches in diameter and were 66 feet tall – 23 percent taller than the adjacent open-pollinated hybrid larch plantation.

There's not much of a larch market in the Northeast because our native larch, the tamarack, doesn't grow in sufficient quantity. However, the exotic larch that was planted in the late 1980s and early 1990s will be coming on-line in the next five to ten years. At present, there might be 25,000 acres of larch plantation in Maine and Michigan; estimates suggest as much as 11,000 acres in Quebec and another 20,000-30,000 acres in the Maritimes. This amount of acreage offers opportunities for niche marketing of larch lumber. Otherwise, much of the volume will likely be used for pulp and paper products.

All species in the larch family have long fibers, which make them suitable for pulp and paper, and the lumber is famously resistant to rot, making it a good candidate for ship building, house siding, and other outdoor applications. European larch has been used in bridge construction in Europe – a testament to its strength and durability.

Because exotic larches are shade-intolerant and attain their greatest growth on the best forest soils, competition control is necessary to get the plantation established. Larger land management companies use herbicides two years after clear-cutting a hardwood stand, then plant seedlings on an eight-foot spacing. In Quebec, as in Europe, the recommendation is for ten-foot spacing to increase the number of commercial-sized stems during the first thinning.

All plantations have their vulnerability and exotic larches are no different. Exotic larches can be damaged by heavy wet snow in the fall when the needles are still on the trees. Larch is also vulnerable to the larch casebearer and to larch canker. In fact, my understanding is that exotic larches are no longer planted in Ireland for fear of the larch canker. However, isolated plantations are less likely to be vulnerable.

Exotic larches will sometimes regenerate naturally; however, the seedlings don't like competition, so without good weed control it seems unlikely that these feral individuals will become invasive and dominate a site.

Foresters are fond of pointing out that they won't be around to see the fruits of their labor, but these hybrid larch trials can make even an older forester feel young. Thirty years have passed since these hybrids were planted, and the trees have performed as well as, or better than, expected. If you're a landowner looking for a short-rotation softwood species, hybrid or exotic larches might be worth a try.

David Maass is a retired chain-of-custody and forest management certification auditor and served as research forester for Scott Paper Company until 1988.